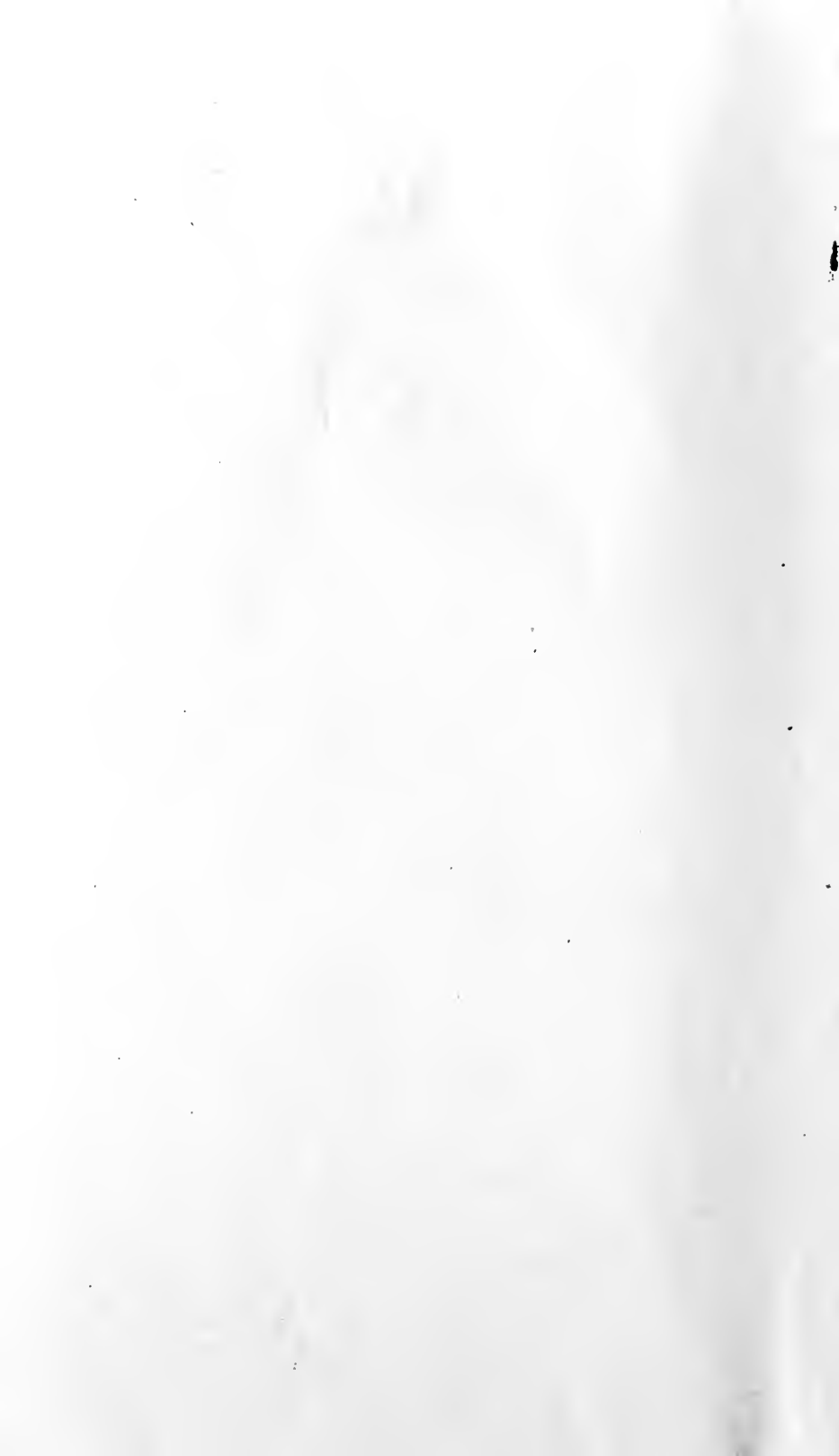


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# Labor Input on West Virginia Farms

by L. F. HERRMANN, R. O. STELZER,  
and W. W. ARMENTROUT

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# Labor Input on West Virginia Farms

by L. F. HERRMANN, R. O. STELZER, and W. W. ARMENTROUT

**M**OST FREQUENTLY IN PLANNING FARM OPERATIONS the kinds and amounts of crops to be grown depend either upon the kind, quality, and amount of land available or upon the markets available. Not uncommonly, however, the farm plan must consider the labor requirements of the crops to be grown by adjusting the crops to fit the labor available. Such adjustments require facts concerning the amount of labor demanded by crops as well as the time it must be applied. Another common use for figures concerning the amount of labor used in growing crops lies in estimating costs of production. Few farm people can tell without estimates the number of hours of labor spent on an acre of any crop, yet for many crops labor is 20 to 25 percent of the total cost of production.

It is the purpose of this bulletin to indicate the labor requirements of some of the more common crops in West Virginia. The data were obtained in a survey of 716 farms in 38 counties. Estimates were taken of the labor expended on livestock and on crops grown during 1934. Whenever the farmer believed his 1934 conditions to be abnormal, his estimate of normal conditions was taken and have been used in the present study.

The labor requirements for the various crops are given for each month of the year in Table 1. In Table 2 they are given by operations. Table 1 also gives information concerning the number of farms on which

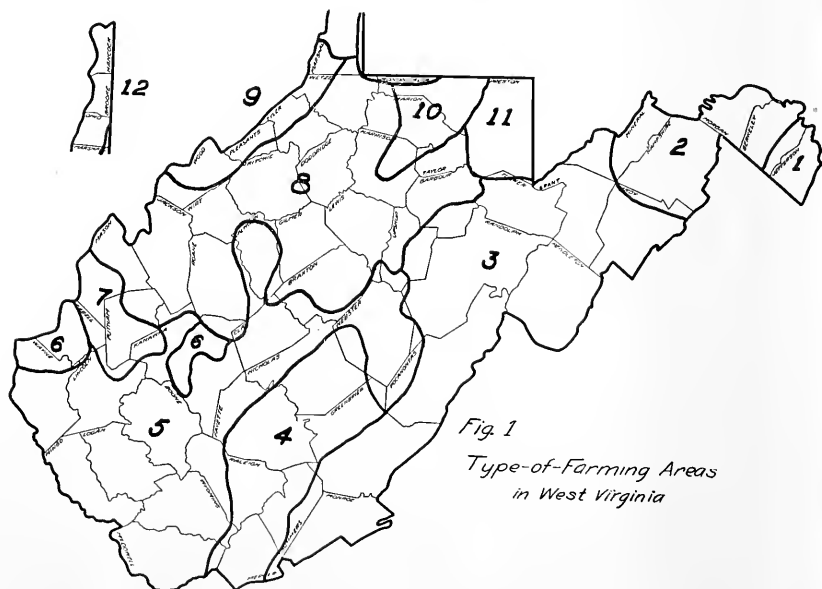


Fig 1  
Type-of-Farming Areas  
in West Virginia

TABLE 1—Labor requirements of crops, by months, with supplementary data

Crop	No. of farms reporting	Total acres on farms reporting	Acres per farm reporting	Yield per acre	Kind of labor	Hours of Labor Per Acre												Total
						Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Alfalfa	30	253	8.4	T. 3.2	Man Horse	—*	—	—	—	1	7	6	7	5	—	—	—	26
						—	—	—	—	1	7	6	6	4	—	—	—	24
Barley	9	53	5.9	bu. 24	Man Horse	—	1	—	2	—	6	3	2	4	4	—	—	20
						—	—	—	3	—	6	3	5	8	8	—	—	34
Buckwheat	31	154	5.0	bu. 21	Man Horse	—	—	—	2	1	6	7	1	8	4	1	—	30
						—	—	1	2	3	11	13	—	2	1	—	—	33
Corn	678	6,614	9.8	bu. 34	Man Horse	1	2	3	6	8	10	5	—	12	11	1	1	60
						3	4	5	11	10	8	4	—	3	5	1	2	56
Clover and timothy	631	11,499	18.2	T. 1.3	Man Horse	—	—	—	—	—	1	9	1	—	—	—	—	11
						—	—	—	—	—	2	10	1	—	—	—	—	13
Oats (grain)	105	659	6.3	bu. 28	Man Horse	—	1	4	9	1	1	7	4	—	—	—	—	27
						1	2	7	19	2	—	4	2	—	—	—	—	37
Oats (hay)	120	707	5.5	T. 1.1	Man Horse	—	1	4	8	2	1	6	1	—	—	—	—	23
						1	1	6	14	4	2	8	1	—	—	—	—	37
Potatoes	76	128	1.7	bu. 147	Man Horse	3	3	5	23	19	19	8	9	17	10	1	—	116
						4	5	9	18	13	14	9	4	10	5	1	—	92
Rye	15	124	8.3	bu. 10	Man Horse	—	—	—	—	—	5	6	1	4	4	—	—	20
						—	—	—	1	—	4	5	2	7	6	—	—	25
Soybeans (hay)	92	547	5.9	T. 1.7	Man Horse	—	—	2	2	6	2	1	3	7	—	—	—	23
						—	—	3	4	11	5	2	4	8	—	—	—	37
Strawberries	9	12	1.3	qts. 3,102	Man Horse	—	—	2	18	27	22	30	3	—	—	—	—	302
						—	—	1	1	6	1	3	2	—	—	—	—	14
Tobacco	15	21	1.4	lbs. 907	Man Horse	26	5	9	11	16	63	70	47	91	—	9	34	381
						1	1	4	16	12	14	11	5	35	—	—	—	99
Tomatoes	10	39	3.9	bu. 142	Man Horse	—	—	3	2	8	27	17	11	32	7	1	—	111
						—	—	5	4	9	9	3	5	1	2	6	—	53
Watermelons	7	30	4.3	no. 1,478	Man Horse	1	2	—	5	24	18	9	36	29	13	—	—	137
						1	5	—	9	27	13	8	2	6	6	—	—	77
Wheat (grain)	285	3,028	10.6	bu. 18	Man Horse	—	—	—	—	—	2	8	2	6	3	—	—	21
						—	—	—	—	—	1	7	3	12	6	—	—	29
Wheat (hay)	29	165	5.7	T. 1.2	Man Horse	—	—	—	—	—	3	5	1	7	2	—	—	18
						—	—	—	—	1	4	6	2	12	3	—	—	28

\*A dash indicates an average of less than 0.5 hour.

TABLE 2—*Labor requirements of crops, by operations*

Crop	Kind of labor	Labor Hours Per Acre								Total
		Plow- ing	Fertil- izing	Prepar- ing seedbed	Plant- ing	Culti- vating	Harvest- ing	Market- ing		
Alfalfa	Man Horse	.. ..	1 1	.. ..	.. ..	.. ..	25 23	.. ..	26 24	
Barley	Man Horse	6 12	.. ..	5 10	2 3	.. ..	6 9	.. ..	20 34	
Buckwheat	Man Horse	8 15	— —*	5 10	3 4	.. ..	14 4	.. ..	30 33	
Corn	Man Horse	8 17	1 2	6 12	3 2	18 15	24 8	— —	60 56	
Clover and timothy	Man Horse	.. ..	— —	.. ..	.. ..	.. ..	11 13	.. ..	11 13	
Oats (grain)	Man Horse	8 16	— —	5 10	3 5	.. ..	11 6	.. ..	27 37	
Oats (hay)	Man Horse	7 13	1 1	4 8	3 4	.. ..	9 11	.. ..	23 37	
Potatoes	Man Horse	7 14	5 9	7 12	19 7	39 <sup>1</sup> 29	37 21	2 ..	116 92	
Rye	Man Horse	4 6	.. ..	5 8	1 2	.. ..	10 9	.. ..	20 25	
Soybeans (hay)	Man Horse	6 12	1 1	4 8	2 3	.. ..	10 13	.. ..	23 37	
Strawberries	Man Horse	.. ..	2 2	.. ..	.. ..	71 10	209 —	20 2	302 14	
Tobacco	Man Horse	8 17	6 3	22 17	41 1	130 <sup>2</sup> 25	108 36	66 —	381 99	
Tomatoes	Man Horse	9 18	4 4	4 8	19 1	19 13	44 1	12 8	111 53	
Watermelons	Man Horse	8 17	4 7	7 12	7 4	33 <sup>3</sup> 24	52 9	26 4	137 77	
Wheat (grain)	Man Horse	4 7	1 1	4 10	2 4	.. ..	10 7	— —	21 29	
Wheat (hay)	Man Horse	4 7	— —	3 7	3 4	.. ..	8 10	.. ..	18 28	

<sup>1</sup>Includes 7 man hours and 4 horse hours for spraying.<sup>2</sup>Includes 59 man hours and 0 horse hours for worming.<sup>3</sup>Includes 12 man hours and 1 horse hour for spraying.

\*A dash indicates an average of less than 0.5 hour.

topping, and suckering.

each crop was reported, the number of acres of each crop upon which the averages are based, average acreages per farm, and average yields per acre. Figure 1 shows the location of type-of-farming areas in the state, while figures 2 to 15 illustrate the seasonal distribution of labor on the various crops.

Anyone using these averages will appreciate that variations will be the rule rather than the exception; that the data include widely different conditions of soil and topography and an equally wide assortment of cultural practices. To have summarized the data by type-of-farming areas within the state would have made them more readily applicable to individual conditions. This publication, however, deals mainly with state averages.

## GRAIN CROPS

### *Corn*

Because corn is the most widely grown tilled crop in West Virginia, more records were taken for it than for any other crop. Records were taken on 678 farms which raised 6,614 acres of corn. Corn provides, therefore, the best opportunity for showing variations in practices throughout the state.

Certain practices were typical of the state as a whole. Plowing was done throughout the winter and early spring. Most of the plowing was done with two-horse walking plows. Where crop land was level these were mostly of the fixed mold-board type, but on hilly crop land plowing was done with reversible mold-board or hillside plows. Farmers who had much hilly crop land tended to use the hillside plow for their level land as well, though on level ground it will not turn as much in a day as will a fixed mold-board plow.

Seedbeds were prepared shortly before planting time. The usual implements were the disc, spring-, and spike-tooth harrows and the plank drag. The favorite combination varied among localities.

The amount of use made of different methods of planting varied considerably from area to area. Large fields and level land favored the use of one- and two-horse planters, while rolling land and small fields necessitated the use of much hand labor. Hand planting usually involved marking the field with a single-shovel plow drawn by one horse, with the result that some horse labor was used even when the corn was hand planted.

The methods followed in cultivation varied considerably. The most efficient cultivation found on level or nearly level land was accomplished with two-horse cultivators and included little or no hand hoeing. On the steepest hillsides the only cultivating was done by hand hoeing. Midway between these extremes was the usual practice whereby one man cultivated with a one- or two-horse cultivator, while a second man followed with a hoe, as much time being spent in hoeing as was spent in horse cultivating.

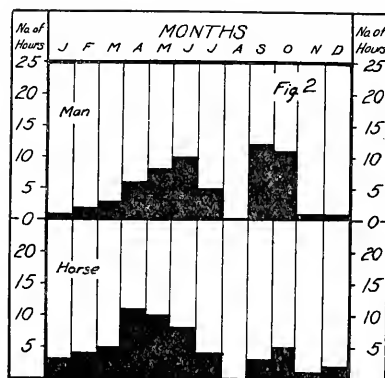
The method of harvesting used generally in the state was to cut and shock the corn, and later to husk it in the field. Slightly less than

half the labor of harvesting lay in cutting and shocking, which was done between mid-September and mid-October. The remainder of the harvesting labor was in husking and hauling—operations which may last well into the winter and are seldom completed immediately after cutting and shocking.

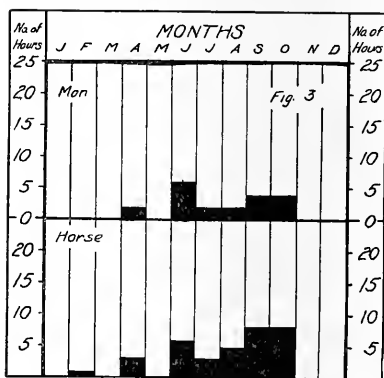
The farms in this study had an average of 9.8 acres in corn. Yields averaged 34 bushels per acre.

### Barley

The records upon which the barley figures are based cover 53 acres on 9 farms in Areas 1, 2, and 3 \*. The average acreage was 5.9 acres per farm and the yield averaged 24 bushels per acre. The grain was mostly winter barley. The ground was plowed on 61 percent of the area, but merely disked on 39 percent. Preparation of the seedbed, whether or not the ground had been plowed, usually consisted of a single disking and a single harrowing with a spring-tooth harrow. All barley was planted with a grain drill and harvested with a grain binder. Some was threshed from the field and some from stacks, but data concerning the relative frequency of each method were not obtained.



CORN



BARLEY

### Oats (Grain)

A total of 105 farms distributed throughout the state reported on the labor expended on oats for grain. The farms had 659 acres altogether, averaging 6.3 acres per farm with a yield of 28 bushels per acre. Practically all oats ground was prepared by plowing. Fitting the seedbed consisted generally of one time over with the spring-tooth harrow and one time over with either disc, drag, or spike-tooth harrow. Where the ground was steep, oats were often planted by hand broadcasting, then covered with an additional time over with one of the implements used in preparing the seedbed. About 75 percent of the acreage, however, was planted with a grain drill.

\*See Fig. 1 for map showing the areas which will be referred to throughout this bulletin.

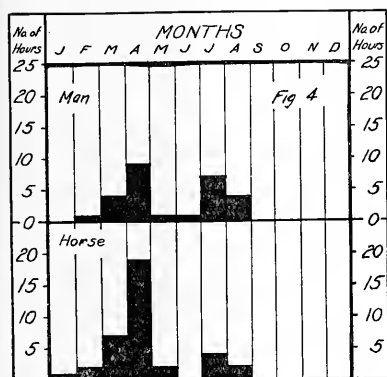


Harvesting was done with a grain binder on more than 67 percent of the acreage surveyed, with cradles on 31 percent, and with a mower—oats being bound into sheaves by hand—on 2 percent.

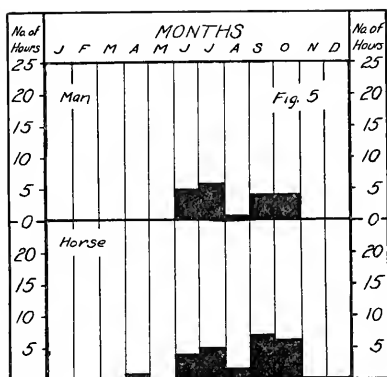
## Rye

Records of labor input on rye were obtained on 15 farms that raised a total of 124 acres of the crop. Most of the records were in Areas 1, 2, and 3, but one was from a farm in Area 9. The average number of acres per farm was 8.3, and the average yield was 10 bushels.

For rye, 44 percent of the ground was plowed. Land not plowed was disked once. The remainder of the seedbed preparation generally consisted of two times over with the spring-tooth harrow and of infrequent use of spike-tooth harrow, drag, or roller. All the farms used grain drills for seeding rye. In harvesting, grain binders were generally used, but 3 percent of the acreage was cradled.



OATS (Grain)



RYE

## Wheat

Records were obtained for wheat in all areas surveyed, a total of 285 records representing 3,028 acres of wheat. In Areas 1 and 2, and to a somewhat lesser extent in Area 3, wheat is a major crop, ranking next to corn and hay in acreage and total labor input. In these areas the cultural practices differ somewhat from the practices followed in other parts of the state. Less of the wheat ground was prepared by plowing in Areas 1 to 3 than in others, ranging from 31 to 47 percent of the wheat acreage in counties in Areas 1 to 3 and from 44 to 86 percent in counties in the other areas.

In all areas seedbeds were generally disked once, whether plowed or not. Other implements were not used as generally as the disc; but when they were used, the usual practice was once over with both a spring-tooth and a spike-tooth harrow, or a spring-tooth or a spike-tooth harrow and, in either case, a drag. Except in Areas 1 to 3 there was a strong tendency for wheat to be hand-broadcast on hilly fields.

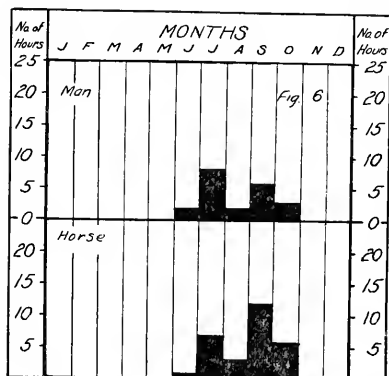
Wheat was cut mostly with a binder in Areas 1, 2, and 3, though cradles were used to some extent on the farms having smaller acreages. Throughout other areas of the state cradles were used extensively.

### Buckwheat

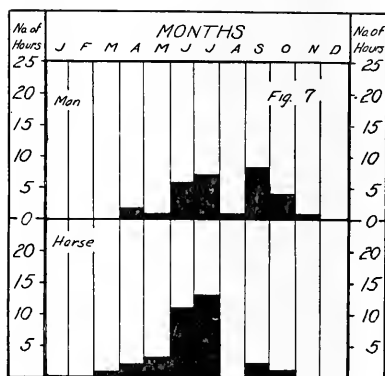
Estimates of labor input on buckwheat were obtained on 31 farms in Areas 2, 3, 5, 8, 10, and 11. They cover a total of 154 acres, the average acreage per farm being 5.0 acres; the average yield, 21 bushels.

Buckwheat ground was plowed mostly in June or the first half of July. The fitting of the seedbeds was less intensive than for other grain crops, even though as much time was spent in the operation. Some buckwheat was planted by hand, and the harrowing in of this seed was equivalent to additional fitting of the seedbed.

Buckwheat was harvested mostly by hand, cradles being used on more than 65 percent of the acreage reported.



WHEAT



BUCKWHEAT

### HAY CROPS

#### Alfalfa

The data given for alfalfa cover only the harvesting of approximately 2.5 cuttings. In estimating for two cuttings the labor shown for September should be omitted, while for three cuttings it should be doubled. The harvest methods for alfalfa were much the same as for grass hays. Records were obtained from 30 farms that raised a total of 253 acres of alfalfa. The average acreage was 8.4 acres, the average yield 3.2 tons.

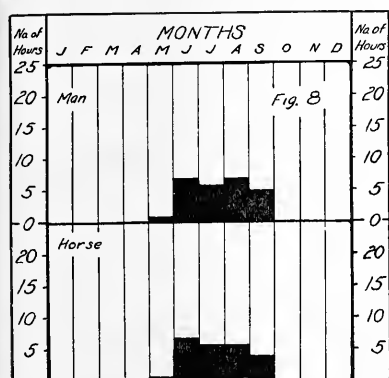
#### Cereal Hay

The use of oats and wheat for hay is common. Records were obtained on 129 farms raising oats hay and on 29 farms raising wheat hay. The practices were much the same as when the crop was grown for grain except that they were less intensive; less fertilizer was used, and seed-

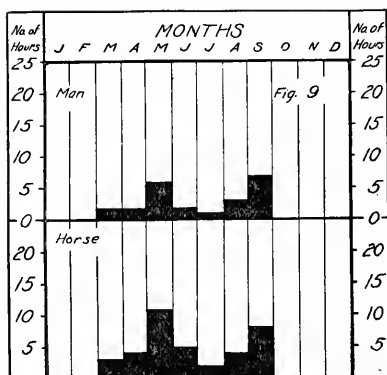
beds were prepared less thoroughly. Grain drills were used for seeding oats on only 37 percent of the acreage planted to that crop for hay. Harvest methods for the cereal hays were the same as for other hays.

### *Soybean Hay*

Since soybeans are widely grown for hay, records were obtained in all areas surveyed. The average acreage was 5.9 acres per farm, 92 farms reporting a total of 547 acres. The average yield was 1.7 tons per acre.



ALFALFA



SOYBEANS

Most of the acreage planted to soybeans was first plowed. Whether or not it was plowed, preparation of the seedbed usually consisted of one disking, followed by spring- and spike-tooth harrow or by spring- or spike-tooth harrow and by drag. On 38 percent of the acreage soybeans were hand-broadcast and harrowed in. Practices followed in harvest were the same as for other hays. Not much difference was found between harvest labor for soybeans and for other hay crops.

### *Clover and Timothy Hay*

Under the classification of clover and timothy were included all meadows cut for hay. The labor consisted of the time spent in harvesting one cutting, rarely two, and in applying an occasional top dressing of manure. The methods of harvesting clover and timothy hay were typical of those used on other hays such as alfalfa, soybeans, and the cereals. The hay was cut and allowed to cure in the swath for a half day or a day. Then it was raked with a dump rake, shocked, and allowed to finish curing in the shock. Finally it was stacked, usually in the field and less frequently under cover.

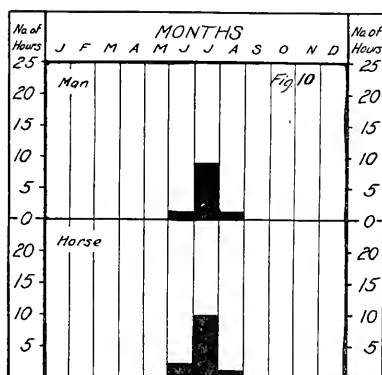
Reports for this class of hay were obtained on 631 farms having a total of 11,499 acres. The average acreage per farm was 18.2 acres and the average yield was 1.3 tons.

## MISCELLANEOUS CROPS

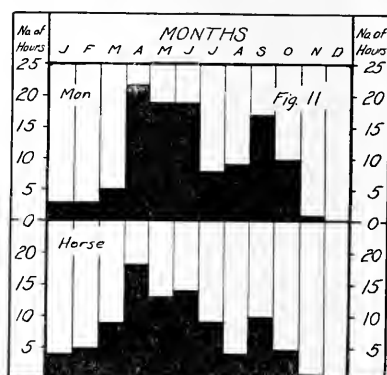
### Potatoes

Potatoes are grown most extensively in Areas 3 and 11, but the averages given are made up from 76 records taken in all the areas surveyed. In the course of the survey, labor records were not taken where less than one-half acre of potatoes was grown. The average acreage reported was 1.7 acres per farm. The average yield was 147 bushels per acre.

Potato ground was plowed throughout the winter. The seedbed was prepared just before planting. Typically the preparation consisted of one time over each with disc, spring-tooth harrow, and drag. Some use was made of spike-tooth harrows and cultipackers also. Potatoes were planted between the first of April and the middle of May. Hand planting was the usual method, although horse-drawn planters were used for 22 percent of the acreage. When planting was done by hand the rows were usually furrowed out with a single-shovel plow. Labor for planting includes the work of cutting and treating seed also.



CLOVER AND TIMOTHY



POTATOES

Potatoes were cultivated about  $3\frac{1}{2}$  times and sprayed on an average of 1.4 times. The greater part of the cultivating was done with one-horse cultivators, and there was considerable hand hoeing.

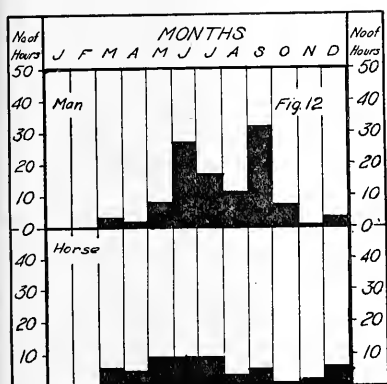
As some of the records were for early potatoes and some for late potatoes, harvesting is shown to extend from the first of August to the middle of October. However, most of the crop was dug during September. Potato diggers were used in harvesting 28 percent of the total acreage. Of the remaining acres a few were dug by hand, but the majority were plowed out with a shovel plow. Only a small amount of labor was put in at grading and marketing.

### Tomatoes

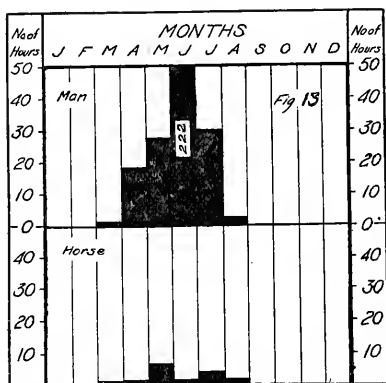
Records on tomatoes were obtained in Areas 2, 7, and 9. Seven of the 10 records are from Morgan County in Area 2, where tomatoes are

grown for canneries. In Areas 7 and 9 tomatoes are grown for consumption in the fresh state.

With a total of 39 acres in tomatoes, the average acreage was 3.9 acres per farm, the average yield, 142 bushels per acre. The ground was plowed in March and April. The seedbed was prepared in the last half of May, the typical practice being one to two times over each with spring- and spike-tooth harrow. Plants were set out by hand during the first half of June. They were cultivated 3.55 times with a one-horse cultivator and hoed 1.22 times. Harvest commenced about the first of August and continued into the first half of October, the labor of marketing being concurrent.



TOMATOES



STRAWBERRIES

### Strawberries

Records were obtained on 12 acres of strawberries on 9 farms in Areas 3, 5, 8, 9, and 10. The data summarized concern only the care typical of the crop during the year following the one in which the plants were set out. The average acreage per farm was 1.4. The average yield obtained was 3,104 quarts per acre.

Strawberries were cultivated 2.20 times from April to August. The harvesting and marketing came mostly in June, making a pronounced peak-labor period.

### Watermelons

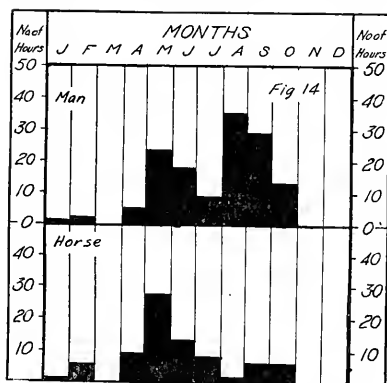
Watermelons are among the several truck crops grown in the Ohio River Valley. The seven records upon which the following figures are based were obtained in Mason and Wetzel counties. The farms reporting raised a total of 30 acres, or 4.3 acres per farm with an average yield of 1,428 melons per acre. Ground for melons was plowed about the first of May, the seedbed prepared immediately, and planting done by hand about May 15. The melons were cultivated about four times between June 1 and August 1 and sprayed twice during that time. Harvesting commenced about August 1 and continued into the first half

of October. The work of hauling to market was concurrent with harvesting.

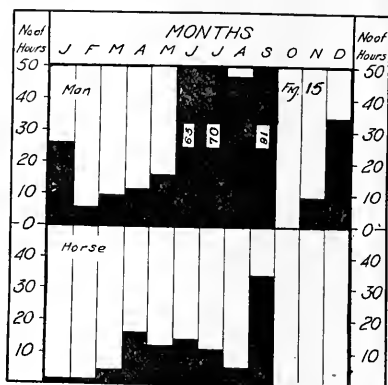
## Tobacco

Tobacco is grown in Area 7, in Area 6 in Cabell county, and in nearly by parts of Area 5. The 15 records on which the averages are based however, were taken only in Area 7. The tobacco grown was a light tobacco used in cigarettes. The total area was 21 acres and the average acreage per farm, 1.4 acres. The average yield was 907 pounds per acre.

The labor of preparing a bed for growing the young tobacco plant comes during the late fall and early winter. This labor has been included as part of the operation of preparing the seedbed.



WATERMELONS



TOBACCO

Ground was plowed for tobacco in March and April. Seedbed preparation was completed about the middle of May, and the plants were set out during the last half of May. Setting out was done by hand. Cultivating commenced the last half of May and continued into the first half of August. One-horse cultivators were used exclusively, and considerable hoeing was done. The work of topping, worming, and suckering began in June, but most of it came in July and August, continuing to the end of August. Harvest commenced in the last half of August and continued through September. At harvest the crop was hung on poles in sheds to cure and left until November and December, when it was stripped and tied. Labor at stripping and tying was included with hauling to market under the heading of marketing and, with hauling, continued throughout January and into February.

## SUMMARY

Labor requirements are given for some crops commonly grown on West Virginia farms, along with a discussion of practices commonly followed. The total requirements for each crop are broken down to show requirements by operations and seasonal requirements by months.



